October 17, 2005

Ms. Marlene H. Dortch
Secretary
Federal Communications Commission
445 12th St., S.W.
Washington, D.C. 20554

Re: **Report of Dr. Bruce M. Owen; IB Docket No. 05-221**

Dear Ms. Dortch:

The attached Report of Bruce M. Owen, Morris M. Doyle Centennial Professor in Public Policy at Stanford University,[1] highlights the pro-competitive basis of the Commission's proposal to provide the existing 2 GHz mobile satellite service ("MSS") providers with access to a *pro rata* 2 x 10 MHz spectrum assignment.[2] As a 2 GHz MSS licensee eager to bring new competition to the increasingly consolidated mobile communications industry, TMI/TerreStar is pleased to present Dr. Owen's report as further support for the Commission's proposal.

Although the Report speaks for itself, following is a brief overview of Dr. Owen's conclusions:

**There is No 2 GHz MSS "Duopoly"**

The 2 GHz MSS is a frequency band, not a market. Just as customers of the terrestrial wireless providers do not distinguish between services provided on PCS spectrum and those provided on cellular spectrum, MSS consumers will not differentiate between services provided over the Big LEO, L-band, and 2 GHz MSS bands. Thus, the two 2 GHz MSS providers, ICO and TMI/TerreStar, can be expected to compete vigorously with Inmarsat and Globalstar, and possibly with other MSS providers as well. Even the very possibility of this inter-band MSS competition will provide competitive pressure on TMI/TerreStar and ICO.

Moreover, there is great potential for competition between MSS/ATC providers and the terrestrial wireless industry. Indeed, substantial competition between MSS/ATC services and cellular and PCS services is at the very heart of TMI/TerreStar's business plan. It is likely

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[1] The attached report expands an earlier analysis provided by Dr. Owen which was attached to TMI/TerreStar's reply comments in IB Docket No. 05-221. *See* Reply Comments of TMI and TerreStar, IB Docket No. 05-221, Ex. 4 (filed Aug. 15, 2005).

[2] *See Commission Invites Comments Concerning Use of Portions of Returned 2 GHz Mobile Satellite Service Frequencies*, Public Notice, FCC 05-134, IB Docket No. 05-221 (rel. June 29, 2005).

that many of the over 100 million cellular and PCS customers will view MSS/ATC as a substitute for those services.

Given that this service is in its earliest stages of development, and given changing technology and as yet unknowable demand conditions, it is unwise to constrain the development of new services by uncritical reliance on a rule of thumb intended for use in very different circumstances.

## Two Strong Competitors in the 2 GHz Band

Even if the 2GHz MSS spectrum were a market, two efficiently sized competitors will be better than three inefficient competitors in the 2 GHz band. Mandating at least three competitors in the 2 GHz band would be wrong not only because it would treat the 2 GHz band as its own "market," but also because it could sacrifice important efficiencies that the existing 2 GHz licensees can achieve if provided access to sufficient spectrum. TMI/TerreStar and other parties to this proceeding have documented the need for a 2 x 10 MHz assignment. Given that the 2 GHz band is allocated only an aggregate 2 x 20 MHz, the addition of a third licensee would make weak competitors of all the licensees in the band and thus preclude development of a low-cost consumer-oriented mobile telecommunications service. This would leave users with the niche mobile satellite service that exists today.

## Tying-Up the 2 GHz Spectrum in Regulatory Proceedings Will Impede Competition

Competitors often use regulatory proceedings to restrict competition and raise their rivals' costs. We see this principle at work as Inmarsat, Globalstar, and various terrestrial wireless interests demand that the Commission initiate new regulatory proceedings to allocate surrendered 2 GHz spectrum. If successful, these strategies could weaken the ability of the 2 GHz MSS licensees to compete and impose serious delays in the introduction of services. Consumers would likely bear most of this burden in foregone services and higher prices.

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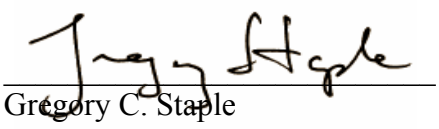
Dr. Owen's report speaks to the competitive benefits of a robust 2 GHz MSS/ATC service. But to be truly competitive, that service requires access to sufficient spectrum – an advantage enjoyed for years by incumbents like Inmarsat and the large PCS and cellular providers. Accordingly, TMI/TerreStar reiterates its request that the Commission promptly redistribute surrendered 2 GHz MSS spectrum on a *pro rata* basis to the existing licensees in the band.

Respectfully submitted,



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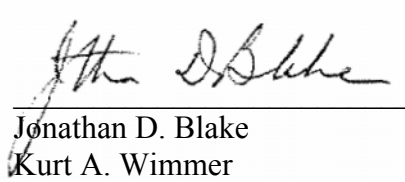

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**Competition and Licensing in the 2 GHz Band**

Bruce M. Owen

Executive Summary

The issue before the Commission is whether TMI/TerreStar and ICO should be assigned a total of 2 x 10 MHz each, or whether the remainder should be reserved for a third operator in the 2 GHz band. The Commission's initial apparent presumption that 2 GHz MSS operators will be subject to competition only from operators in the 2 GHz band is unwarranted. The appropriate assessment of competition facing 2 GHz operators must be forward looking and look at all potential competitors. Evidence suggests that several satellite providers will be able to offer a service like the hybrid satellite terrestrial service planned by TMI/TerreStar and ICO. Terrestrial cellular and PCS services also will likely be a source of competition for most of TMI/TerreStar's and ICO's MSS-ATC customers. It will be irrelevant to consumers deciding which wireless carrier to use that TMI/TerreStar's service is provided from a satellite or that its service uses 2 GHz spectrum. Consumers will purchase the wireless service of the competitor that best meets their needs, regardless of the particular technology or spectrum band used to deliver that service.

If the Commission were to insist on three operators in the 2 GHz band, it would run the risk that none of these operators would have enough spectrum to be viable providers of high-valued service. The addition of a third 2 GHz licensee may actually diminish, rather than increase, the effectiveness of competition in serving user interests, since no licensee would have the 2 x 10 MHz of spectrum believed to be necessary to deploy truly effective competitive service to the public. Moreover, delays and uncertainties caused by further regulatory proceedings to consider the addition of other providers or to determine market demand could have the effect of weakening TMI/TerreStar and ICO as providers and competitors.

**Competition and Licensing in the 2 GHz Band**

Bruce M. Owen

*Introduction*

My name is Bruce M. Owen. I am the Morris M. Doyle Centennial Professor in Public Policy in the School of Humanities and Sciences at Stanford University, and Director of the interdisciplinary Program in Public Policy. I am also the Gordon Cain Senior Fellow in the Stanford Institute for Economic Policy Research. I hold a B.A. from Williams College (1965) and a Ph.D. in economics from Stanford University (1970).

I am also a consultant to the economic consulting firm Economists Incorporated, which I co-founded in 1981 and of which I was CEO until 2003. Before founding Economists Incorporated, I was chief economist of the Antitrust Division of the United States Department of Justice (1979-1981) and, earlier, of the White House Office of Telecommunications Policy. I am the author of a number of books and articles dealing with the economics of regulation, antitrust economics and telecommunications policy. I have consulted with antitrust and other agencies of the U.S. government, the World Bank, and several foreign governments on competition policy. I also have been a consultant (and in some cases a testifying expert in state and federal courts) for a large number of private and government clients in connection with antitrust issues. My curriculum vitae is attached as Appendix 1 to this report.

At the request of TMI Communications and Company Limited Partnership, which is affiliated with TerreStar Networks, Inc. ("TMI/TerreStar"), I wrote a paper dated August 12, 2005, entitled "Economic Issues Related to the Number of Firms Licensed to Use 2 GHz Spectrum for MSS Services."

Assuming that TMI/TerreStar and ICO each are licensed by the Federal Communications Commission to use 2 x 6.7 MHz (i.e., 6.7 MHz in each direction) in the 2 GHz spectrum band, there remains a significant issue before the Commission: whether the balance of 2 x 6.7 MHz in the 2 GHz spectrum band should be divided between

TMI/TerreStar and ICO, bringing their total to 2 x 10 MHz each, or whether the remainder should be reserved for a third operator in the 2 GHz spectrum band.

My conclusions can be summarized as follows. The Commission's apparent presumption that three operators is the appropriate number for the 2 GHz band, which may stem from the 2003 space station processing rules, makes an unwarranted assumption that 2 GHz MSS operators will face competition only from other operators in the 2 GHz band. The appropriate assessment of competition facing 2 GHz operators must be forward looking and consider all potential competitors. Evidence suggests that several satellite providers will be able to offer a service like the hybrid satellite terrestrial service planned by TMI/TerreStar and ICO Global Communications (Holdings) Limited ("ICO"). Terrestrial cellular and PCS services also likely will be a source of competition for most of TMI/TerreStar's and ICO's MSS-ATC customers. If the Commission were to insist on three operators in the 2 GHz band, it would run the risk that none of these operators would have enough spectrum to be viable providers of high-valued, broadband services. Regulatory proceedings to consider competitive issues further would inject delay into the spectrum assignment process and could have the effect of weakening TMI/TerreStar and ICO as providers and competitors.

*Competition Facing Operators in 2 GHz Spectrum*

Analysis of the effects of the number of competitors in a market requires an appropriate definition of the "market." A market, for purposes of economic analysis, is a collection of goods and services that consumers regard as reasonable substitutes.[1] Consumers often substitute between services provided over different frequency bands or in different regulatory classifications. For example, customers may substitute between

[1] Antitrust economists typically define markets in the manner set forth in the Department of Justice and Federal Trade Commission, *Horizontal Merger Guidelines* (April 2, 1992). These Guidelines state that a market is "a product or group of products and a geographic area in which it is produced or sold such that a hypothetical profit-maximizing firm, not subject to price regulation, that was the only present and future producer or seller of those products in that area likely would impose at least a 'small but significant and nontransitory' increase in price, assuming the terms of sale of all other products are held constant." (§1.0) A properly defined market has both a product and a geographic dimension. The product or products included is called a product market; the area is called a geographic market.

cellular telephone services, personal communications services ("PCS"), and specialized mobile radio ("SMR") services. The Commission and the Department of Justice Antitrust Division have defined a market—mobile wireless telephone services—that comprises all three services.[2] Similarly, in approving the transfer of Motient and TMI licenses to MSV, the Commission recognized that MSV would compete not only with Inmarsat (L band), but also with Globalstar, Iridium, Orbcomm and ICO Teledesic, all operating outside the L band.[3] Thus, in general, neither frequency bands nor other regulatory classifications define economic markets as such.

A. Competition Offered by 2 GHz MSS Providers

To define the market relevant for the allocation of 2 GHz spectrum, one would ideally start by examining the services to be offered by TMI/TerreStar and/or ICO using the 2 GHz band. One would then identify any services offered by other firms to which marginal customers of TMI/TerreStar and ICO would turn in the event of a hypothetical exercise of market power, such as "a small but significant and non-transitory increase in price."[4] Even more than is usually the case, market definition in this matter must be forward looking, because neither TMI/TerreStar nor ICO currently provides any services using 2 GHz spectrum. Following achievement of the Commission's milestones, both TMI/TerreStar and ICO are planning to launch their satellites in 2007.[5] Thus, there is no

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2 In the Matter of Applications of Western Wireless Corporation and ALLTEL Corporation For Consent to Transfer Control of Licenses and Authorizations; File Nos. 0002016468, et al., WT Docket No. 05-50, Memorandum Opinion and Order, Adopted July 11, 2005, ¶ 38 ("Western Wireless-ALLTEL"); United States of America, v. Alltel Corporation and Western Wireless Corporation, Case Number 1:05CV01345, Competitive Impact Statement, July 6, 2005.

3 In the Matter of Motient Services Inc. and TMI Communications and Company, LP, Assignors and Mobile Satellite Ventures Subsidiary LLC, Assignee, Order and Authorization, adopted November 21, 2001, DA 01-2732, ¶ 24. At that time, ICO Teledesic intended to offer services in the Ka-band. New ICO Global Communications Ltd., SEC Form S-4, Sept. 20, 2000, p. 117.

4 Merger Guidelines, n. 1, supra.

5 Comments of ICO Satellite Services G.P., IB Docket No. 05-221 (July 29, 2005), p. 5. ICO's Annual Section 25.143(e) Report, submitted October 3, 2005, states that ICO expects to launch and be operational in July 2007. TMI/TerreStar's milestones require it to launch in 2007 and be operational in 2008. See FCC 04-144, Memorandum Opinion and Order, released June 29, 2004, p. 21.

service currently being offered using 2 GHz spectrum that could form the basis for a conventional market definition analysis.

In this case, an evaluation of competition that will face firms operating with 2 GHz spectrum must consider the services that TMI/TerreStar and ICO expect to offer in the future and the degree to which other firms will in the future offer services that will be economic substitutes for those of TMI/TerreStar and ICO. My understanding of the services that will be offered in the future is based on my review of publicly available information such as filings to the Commission, public disclosures and analyst reports. I also have had discussions with TMI/TerreStar personnel.

TMI/TerreStar expects to offer Mobile Satellite Service (MSS) with Auxiliary Terrestrial Components (ATC). With ATC, TMI/TerreStar could use terrestrial facilities to provide services in urban areas that would be blocked by terrain or other obstacles from receiving satellite signals. The ability to offer service in urban areas vastly increases the number of potential users. TMI/TerreStar plans to attract enough users throughout the country so that mass scale cellular and PCS phones using MSS-ATC services can be manufactured at a reasonable cost. TMI/TerreStar estimates that this feature would add only $5-10 to the price of the phone. It also believes that it can offer usage charges (e.g., monthly rate plans) that will be similar to those of cellular and PCS providers. The added attraction of TMI/TerreStar's MSS-ATC service is that a subscriber from an urban area can use the phone anywhere in the country. When terrestrial facilities are not near by, such as in rural areas where the low population density makes construction of ATC facilities or cellular or PCS facilities uneconomical, urban residents would be able to communicate using the TMI/TerreStar satellite. Users who are primarily located in rural areas would normally communicate using the satellite, except when moving into areas where ATC facilities are established. As recent events indicate, such service would be especially valuable to customers who wish to prepare for the possibility that they may be unable to use, or beyond the range of, terrestrial systems during an emergency and, irrespective of geographic area, TMI/TerreStar has announced its intention to optimize its system design to accommodate public safety and homeland security users.

ICO has been seeking to offer MSS-ATC service since 2001, and recent filings reiterate these intentions.[6] In its FCC filings, it proposes to serve rural customers as well as urban customers with a single network. ICO also expects that the ability to serve a broader customer base will result in lower handset prices. Services would include cellular-type voice services, broadband, "always-on" packet data services, and "push to talk" dispatch services. ICO also expects military, maritime, recreational and public safety users to be users of its network.

B. Competition by Non-2 GHz MSS Providers

There are at least two firms that will be in a position to offer MSS-ATC service outside the 2 GHz spectrum to compete fully with TMI/TerreStar and ICO. These firms are Globalstar ("Big LEO" spectrum) and Inmarsat (L-band).[7]

Globalstar currently provides voice and data services, and serves emergency responders, the military and other government agencies with its "Big LEO" spectrum.[8] Globalstar already has applied for authorization to offer ATC. Once it receives authorization, Globalstar states that it can offer MSS-ATC "immediately." Globalstar conducted a demonstration of its ATC capability in July 2002.[9]

Globalstar has stated that, if it does not receive an allocation of 2 GHz spectrum, it "may be unable to proceed with its plans to deploy the full range of services," which

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6 Letter from Lawrence H. Williams and Suzanne Hutchings, New ICO Global Communications (Holdings) Ltd., to Chairman Michael K. Powell, Federal Communications Commission, IB Docket No. 99-81 (filed March 8, 2001); Letter from Cheryl A. Tritt, Counsel to ICO Services Limited to Magalie Roman Salas, Secretary, Federal Communications Commission, IB Docket 99-81 (April 20, 2001); and Comments of ICO Satellite Services G.P., IB Docket No. 05-221 (July 29, 2005).

7 Mobile Satellite Ventures ("MSV") also expects to offer MSS-ATC services similar to those offered by TMI/TerreStar. At present, there is an overlap of ownership between MSV and TMI/TerreStar which, they have announced, may be ended with the spin-off of TMI/TerreStar. Nonetheless, for purposes of my analysis, I have not treated MSV as an independent competitor.

8 Comments of Globalstar LLC, IB Docket No. 05-221 (July 29, 2005), pp. 2-3.

9 Globalstar press release, "Globalstar Files Application With FCC For ATC Authority," March 3, 2005, downloaded August 26, 2005 from http://www.globalstar.com/en/news/pressreleases/press_display.php?pressId=371.

apparently includes wireless broadband.[10] Globalstar currently provides internet access and email service.[11] Globalstar has stated that NGSO systems are not viable, and that a future satellite deployment would be a GSO satellite.[12] TMI/TerreStar believes that Globalstar's satellites will need replacement around 2010-2012. A new Globalstar satellite launched at that point could be designed to provide the full range of services that TMI/TerreStar and ICO will offer, using Globalstar's existing spectrum. Thus, Globalstar appears likely to be a future competitor to TMI/TerreStar and ICO.

The Commission is considering whether it will issue 2 GHz spectrum to a third operator or reassign that spectrum to TMI/TerreStar and ICO. It is useful to consider the date that a fully competitive system would commence under these two alternatives. If the Commission were to take the first course, the third operator using 2 GHz spectrum could not reasonably provide service any sooner than October 2008. This is the date that Globalstar recently disclosed as a target operational date, provided that development work done in late 2002 can be recovered and used.[13] Under the milestones the Commission announced when it first approved 2 GHz MSS, Globalstar could take up to five years from the time of authorization to launch a satellite into operation.[14] Although Globalstar has stated that it will construct more quickly than required by its FCC milestones, if one assumes that a new licensee, or even Globalstar, would take all the time permitted under the milestones, then its deployment of a service using 2 GHz spectrum would take place around 2010. Relative to this scenario, a Globalstar deployment using its existing Big LEO spectrum might provide service as early as, or at most two years later than, if a new licensee were allocated the 2 GHz spectrum at issue in this proceeding.

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10 Comments of Globalstar LLC, IB Docket No. 05-221 (July 29, 2005), p. 4.

11 See Globalstar website, http://www.globalstarusa.com/en/data/dataprod/gsp1600.php and http://www.globalstarusa.com/en/data/dataprod/gsp2900.php, downloaded August 26, 2005.

12 In the Matter of Globalstar LLC f/k/a Globalstar, L.P, For Modification of License for a Mobile Satellite Service System in the 2 GHz Band and For Waiver and Modification of Implementation Milestones for 2 GHz MSS System, Supplement to Petition for Reconsideration, File Nos: 183/184/185/186-SAT-P/LA-97, 182-SAT-P/LA-97(64), August 26, 2005, p. 3.

13 Globalstar, Supplement to Petition for Reconsideration, August 26, 2005, pp. 4-5.

14 Report and Order, IB Docket No. 99-81, released August 25, 2000, p. 52.

Inmarsat currently provides MSS services, and is in the process of rolling out its upgraded BGAN service. Inmarsat has said it wants to offer ATC service in the L-band. In a February 15, 2005, press release, Inmarsat stated that it intends "to apply for authorisation [sic] to operate Ancillary Terrestrial Component (ATC) facilities in the USA to provide voice and data communications using L-band frequencies."[15] Inmarsat also stated in its June 1, 2005, prospectus that it expected ATC to extend the reach of MSS into urban areas, to attract new customers to satellite services, particularly BGAN services, and to spur innovation and scale economies in end-user terminals and end-user applications.[16] Furthermore, Inmarsat's September 28, 2005 ex parte letter to the Commission states, "Inmarsat will propose and deploy an ATC system, using its current generation of L-Band Inmarsat-4 spacecraft, when the business plan and collaboration opportunity based on a hybrid MSS/ATC network has been finalized with Inmarsat's strategic partners."[17] Inmarsat reports that it has use of 2 x 14 MHz of spectrum over North America.[18] Thus, it is clear that Inmarsat is capable of operating a system that is fully competitive with TMI/TerreStar and ICO.

Iridium currently has a constellation of satellites offering voice and data services using "Big LEO" spectrum. Iridium has announced an estimate that its satellites will end their service life range in or after 2014.[19] Iridium could well have the option of launching a GEO satellite to begin offering service at or before that time. Iridium has 5.15 MHz spectrum in which it operates using time division duplex ("TDD"), and permission to share with Globalstar an additional 3.1 MHz was granted by the Commission in June

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15 Inmarsat press release, "Inmarsat to seek ATC license," February 15, 2005, downloaded September 2, 2005 from http://about.inmarsat.com/news/00015672.aspx?language=EN&textonly=False.

16 "Inmarsat plc Prospectus," downloaded 24 August 2005 from http://about.inmarsat.com/investor_relations/default.aspx?top_level_id=6&language=EN&textonly=False. See pp. 46-47.

17 Letter from John P. Janka and Jeffrey A Marks to Marlene H. Dortch, September 28, 2005, pp. 4-5.

18 Inmarsat plc Prospectus, p. 45.

19 Iridium press release, "Iridium Satellite Constellation Passes Milestone for Longevity," March 21, 2005, http://www.iridium.com/corp/iri_corp-news.asp?newsid=124, downloaded September 2, 2005.

2004. Iridium should be able to provide competition for TMI/TerreStar and ICO (for MSS). However, Iridium probably has somewhat lower competitive significance than Globalstar and Inmarsat due to Iridium's smaller spectrum allocation and the longer time interval before it can be expected to launch a new satellite.

The competitive relevance of Globalstar, Inmarsat and Iridium operating outside of the 2 GHz spectrum band is two-fold. First, it appears likely that these operators will actually offer services that compete directly with some or all of the services that TMI/TerreStar and ICO expect to provide. In this event, the relevant market would contain four or five independent satellite operators, which, of course, is at odds with the Commission's presumption (e.g., in the 2003 space station licensing rules) that MSS operators will face competition only from operators within their designated frequency band. Second, while it is impossible to guarantee that all of these players will compete closely with TMI/TerreStar and ICO, the very possibility of such competition can provide a competitive check on the behavior of TMI/TerreStar and ICO, especially in the pre-launch stages. It is important to bear in mind that, even if there were a third operator using 2 GHz spectrum, there is likewise no guarantee that it would provide services that closely compete with TMI/TerreStar and ICO. Finally, the probability that space segment competition will actually take place is not exogenous—that probability would be increased if prices charged for services using 2 GHz spectrum were above competitive levels.

C. Competition from Cellular and PCS Providers

In addition to competition between 2 GHz spectrum operators and other satellite operators, it appears that there will be substantial competition with terrestrial cellular and PCS providers. The Commission itself recognizes that these services may be at least imperfect substitutes, and discusses the possibility that there will be close competition.[20]

[20] FCC, In the Matter of Flexibility for Delivery of Communications by Mobile Satellite Service Providers in the 2 GHz Band, the L-Band, and the 1.6/2.4 GHz Bands; and Review of the Spectrum Sharing Plan Among Non-Geostationary Satellite Orbit Mobile Satellite Service Systems in the 1.6/2.4 GHz Bands, FCC 03-15, IB Docket No. 01-185 and 02-364, Report and Order and Notice of Proposed Rulemaking, Released February 10, 2003, ¶ 39.

Cellular interests that opposed ATC authorization apparently also believed there was potential for competition between such services and cellular and PCS services. For instance, in 2001 filings AT&T Wireless predicted that MSS operators using ATC would cause competitive harm to terrestrial mobile systems, and VoiceStream Wireless stated that MSS-ATC operators would be in competition with DMRS licensees.[21]

TMI/TerreStar expects that its MSS-ATC service will be similar to cellular and PCS service in many ways. Each will offer voice service as well as other advanced features now being developed for cellular and PCS services, such as broadband. TMI/TerreStar expects that the price of its service will be comparable to that of cellular and PCS providers, and that the MSS-ATC phones used by consumers in a mass market will cost only $5-10 more than their cellular and PCS counterparts. The MSS-ATC service may be thought of as a cellular- or PCS-like service with the added feature that it can be used anywhere.

In TMI/TerreStar's view, to be viable a MSS-ATC service must compete with cellular and PCS services. TMI/TerreStar's business model is based on its conclusion that a successful MSS-ATC service must offer a handset that is "transparent"—i.e., essentially the same in form, price and function as handsets for cellular and PCS services. A "transparent" MSS-ATC phone only will be available if the number of subscribers is large enough that phone manufacturers can reach large scale economies. The subscriber base necessary to reach these scale economies is only possible if MSS-ATC services achieve significant penetration in areas that are already served by cellular and PCS services. To achieve such penetration, the price and quality of MSS-ATC phones and services must be attractive to many consumers who have cellular and PCS service as an option. In other words, substantial competition between MSS-ATC services and cellular and PCS services is at the very heart of TMI/TerreStar's business plan.

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[21] Comments of AT&T Wireless Services, Inc., IB Docket No. 01-185 and ET Docket No. 95-18 (October 22, 2001), pp. 4, 11; and Reply Comments of VoiceStream Wireless Corporation, IB Docket No. 01-185 and ET Docket No. 95-18 (November 12, 2001), pp. 1-2, 13-14.

I have performed a few simple calculations to show that, under TMI/TerreStar's vision, MSS-ATC service providers will have to compete for the great majority of their customers with cellular and PCS operators. The Commission has concluded that 99.8% of the U.S. population lives in areas in which digital mobile telephone service is available.[22] Looking ahead to the 2010-2015 period, the U.S. total population will be approximately 320 million if past growth trends persist.[23] Assuming that the geographic area covered by cellular and PCS coverage service does not increase, this would imply about 640,000 people living outside cellular/PCS coverage areas in 2010-2015. The Commission also has found the nationwide penetration rate had risen in 2004 to 62%.[24] If one assumed (for this calculation, conservatively) that MSS-ATC services will achieve 100% penetration in areas not served by cellular and PCS operators, this implies approximately 640,000 MSS-ATC customers living in such areas. In previous filings, TMI/TerreStar has stated that to offer its customers a "transparent" phone closely resembling a cellular or PCS phone in appearance, functionality and price, a customer base of 15-25 million customers is needed.[25] If one took the lower end of this range, and if one assumed that there would be only three MSS-ATC providers (out of five potential candidates), this would imply an MSS-ATC customer base of around 45 million people. Based on these estimates, less than 2% of that customer base would be located in geographic areas not currently served by cellular and PCS operators. Thus, it appears likely that for the vast majority of MSS-ATC customers, cellular and PCS services will be a reasonable alternative and would act as a competitive constraint on the price charged for MSS-ATC service.

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22 FCC, Annual Report and Analysis of Competitive Market Conditions With Respect to Commercial Mobile Services, Tenth Report ("Tenth Report"), released September 30, 2005, ¶ 117.

23 The U.S. Census Bureau has estimated the U.S. population at 281.4 million in 2000 and 293.7 million in 2004. See http://www.census.gov/popest/datasets.html, downloaded September 21, 2005. I have projected the 1% annual growth rate to continue till 2010-2015.

24 Tenth Report, ¶ 161.

25 See Comments of TMI Communications and Company Limited Partnership and TerreStar Networks Inc., July 29, 2005 ("Comments of TMI"), pp. 18-19.

The Commission has in several recent decisions found that MSS should not be considered part of the cellular or PCS relevant product market.[26] For at least two reasons, this determination is consistent with active and widespread competition between TMI/TerreStar and ICO and cellular or PCS operators. First, the Commission's finding regarding the cellular and PCS relevant product market was explicitly based on the price of present MSS services being "significantly higher" than the price of cellular or PCS services.[27] As described above, the future services at issue here will likely be much more competitive with cellular and PCS services than at present. Second, the Commission's market definition determination was made in a context that was subtly but significantly different from the context of allocating 2 GHz spectrum.

Although substitution between MSS services and cellular or PCS services is relevant in both cases, the ultimate question the Commission asked in reaching its finding is tellingly different from the question that is germane to the current proceeding. In its earlier decisions, the Commission considered potential mergers among cellular or PCS services, and it sought to determine whether MSS services provide a significant competitive constraint on cellular and PCS services. To put this in the framework used to define relevant markets for purposes of merger analysis, the Commission found that if there were a significant, non-transitory increase in the price of cellular and PCS services, the movement of customers from these services to MSS services would not be sufficient to make such a price increase unprofitable. Presumably, there are some cellular and PCS customers ("marginal customers") who regard MSS services as a reasonable alternative and would switch from cellular or PCS service to MSS service in response to a change in the relative prices of the two service types. However, the Commission found that potential switchers are too few in number, relative to the large number of cellular and PCS customers who would not switch ("inframarginal customers"), to make such a hypothetical price increase unprofitable.

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[26] Western Wireless-ALLTEL, ¶ 38; In the Matter of Applications of Nextel Communications, Inc. and Sprint Corporation For Consent to Transfer Control of Licenses and Authorizations, File Nos. 0002031766, *et al.,* WT Docket No. 05-63, Memorandum Opinion and Order, Adopted August 3, 2005 ("Nextel-Sprint"), ¶ 58.

[27] Western Wireless-ALLTEL, ¶ 38; Nextel-Sprint, ¶ 58.

The approach in the current 2 GHz proceeding, though similar-sounding, runs in the opposite direction and can easily produce a different answer. Here, the hypothetical situation is that the price of services in the 2 GHz band is raised by a small but significant amount for a non-transitory period. Once again, presumably there are some MSS service users (marginal customers) who would regard MSS services as a reasonable alternative to cellular and PCS services and would switch from one service to the other in response to a change in relative prices. The remaining MSS customers (inframarginal customers) would pay the hypothetically higher price and not switch. It is important to recall that there are well over 100 million cellular and PCS customers today, but only hundreds of thousands of MSS customers. For a given number of marginal customers who would switch service types in response to a change in relative prices, there are many more inframarginal cellular and PCS customers than there are inframarginal MSS customers. This fact alone increases the likelihood that the number of MSS customers who would not switch to cellular or PCS service is sufficiently small relative to the number of customers who would switch that such a hypothetical increase in the price of MSS service would indeed be profitable. In this case, MSS would not be a separate relevant market; instead, cellular and PSC services would be included in the market.

*Optimal Number of Competitors*

In a soundly defined market, the optimal number of competitors—i.e., the number that maximizes consumer welfare—is determined by a tradeoff between economies of scale and other cost savings or product improvements that might result from larger firm size and the effects of the number of sellers on price and non-price competition. It is important to remember that the effectiveness of competition in a particular market does not depend only on the number of competitors. It is necessary to examine the characteristics and behavior of firms in the market. Two strong firms in some markets may compete more effectively than three weaker ones, although here, as stated, there would be more than two satellite providers and even more competition when cellular and PCS operators are included in the analysis, as they properly should be.[28] Reliance on a

[28] The point that there may be more effective competition with fewer competitors is often made in merger proceedings, where it may be argued that combining two firms into one may result in a

rule of thumb or presumption calling for a minimum number of licensees in a given band would be misguided not only because, as noted above, a frequency band is not necessarily a market, but also because such a presumption might lead to the needless sacrifice of important efficiencies and thus reduce competition and consumer welfare.

The record in this proceeding refers to a number of efficiencies that TMI/TerreStar could realize if it acquires the additional spectrum. It may use spectrum more efficiently; TMI/TerreStar states that with a 50% increase in the amount of spectrum, it can double its number of users.[29] Moreover, several filings suggest that the additional spectrum will allow TMI/TerreStar and ICO to include broadband services in their product offerings.[30] Boeing suggests that "MSS networks require at least 8 megahertz of spectrum in each direction in order to provide viable and competitive services."[31] If that is correct, then the amount of spectrum available for MSS in the 2 GHz frequency band is not enough to support three viable competitors.[32]

Some commentors wrongly claim that the Commission should require TMI/TerreStar to provide evidence of demand prior to receiving the requested spectrum.[33] The Commission has decided to allocate 2 GHz spectrum through the regulatory process. In this context, it would be unreasonable for the Commission to require applicants to forecast demand, especially when demand is dependent in part on

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stronger competitor and more competition. A very recent example is Commissioner Abernathy's opinion that allowing the merger of Nextel and Sprint will create a "a stronger and more robust competitor." Statement of Commissioner Kathleen Q. Abernathy, Nextel-Sprint.

29 Comments of TMI, p. 11.

30 Comments of TMI, p. 12; Comments of ICO, p. 3; Comments of the Satellite Industry Association, July 29, 2005, pp. 1-2; Letter from Nils Rydbeck to Marlene H. Dortch, July 11, 2005; Letter from Dale Branlund of BRN Phoenix to Marlene H. Dortch, July 11, 2005. See also Comments of Hughes Network Systems, July 29, 2005, p. 7, which states that "2 GHz MSS systems will need more spectrum resources, not less, especially to accommodate the growing demand for ubiquitous anywhere-anytime voice services, universal broadband access, higher data rates, and increased bandwidth requirements."

31 Comments of The Boeing Company, IB Docket No. 05-221, p. 3.

32 Including the current allocations of ICO and TMI/TerreStar, there currently is 20 MHz of spectrum available in each direction for MSS in the 2 GHz range.

33 See Comments of CTIA – The Wireless Association, IB Docket No. 05-221, July 29, 2005, pp. 3-7.

price, and price is determined jointly by supply and demand, with the Commission making decisions about supply. Cellular and PCS services are prime examples of the futility of predicting demand because new services do not provide a reliable basis for prediction. None of the predictions in the early days of those services was remotely reliable.[34]

*Regulatory Proceedings May Impede Competition*

In resolving this proceeding, the Commission must be wary about taking action that will lead to increased costs to 2 GHz MSS providers, thereby decreasing competition to other mobile wireless services and raising user prices. The Commission's, and the Nation's, policies favoring competition in telecommunications services remain in fundamental tension with the persistence of regulation. Much of that tension arises from the possibility that competitors may utilize the Commission's procedures to restrict competition and to raise their rivals' costs, a well known and unfortunate side effect of regulation that I have explored in two books, *The Regulation Game: Strategic Use of the Administrative Process* (with R. Braeutigam, 1978) and *The Political Economy of Deregulation* (with R. Noll, 1983).[35]

The use of further regulatory proceedings to allocate this spectrum could weaken the ability of the 2 GHz MSS licensees to compete and impose serious delays in the introduction of services, and consumers would likely bear most of this burden in foregone services and higher prices. TMI/TerreStar and ICO both point out that reallocating the spectrum at issue through a new processing round or other regulatory proceedings would

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[34] See, e.g., Daniel Brenner, *The 2005 Communications Act of Unintended Consequences*, 57 Fed. Comm. L.J. 175, 179 (2005) (noting that "communications policy is particularly susceptible to the law of unintended consequences. Just when you think you can accurately forecast what adjustments to market forces government can best make to improve policy, technology overwhelms the assumptions and recasts the playing field"); Commissioner Kevin J. Martin, Wireless and Broadband: Trends and Challenges, Address Before the Dow Lohnes-Comm Daily Speaker Series (Oct. 15, 2004), *in* 2004 FCC LEXIS 5871 (noting that wireless was initially a niche car phone service that subsequently grew from 16 to 161 million subscribers).

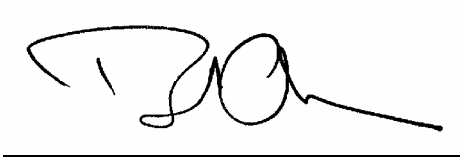
[35] Another source of that tension is the likelihood that particular regulatory policies will differ from the result that would be produced by competition.

impose serious costs on them and cause long delays before the spectrum is useable.[36] Consumer welfare should not be sacrificed to unnecessary regulatory delay.

*Conclusion*

The Commission's apparent presumption that competition is limited only to operators in the 2 GHz spectrum band is unwarranted. The appropriate assessment of competition facing 2 GHz operators must be forward looking. Evidence suggests that at least Globalstar and Inmarsat will be able to offer a service like the MSS-ATC service planned by TMI/TerreStar and ICO. Terrestrial cellular and PCS services will also likely be a source of competition for most of TMI/TerreStar's and ICO's MSS-ATC customers. If the Commission were to insist on three operators in the 2 GHz spectrum, it would run the risk that none of these operators would have enough spectrum to be viable providers of high-valued service. Further regulatory proceedings could have the effect of weakening TMI/TerreStar and ICO as providers and competitors.

Signed:



Bruce M. Owen

October 14, 2005

[36] As noted previously, were TMI/TerreStar and ICO not to receive the spectrum, they might forego substantial efficiencies. Moreover, if they had to engage in a complicated regulatory proceeding to gain the spectrum, they could incur significant costs and experience long delays. Delays reduce the discounted expected value of future returns, reducing the likelihood that investment funds will be forthcoming. The uncertainty associated with such proceedings increases investor risk, with the same effect. Consumers might also suffer long delays in receiving services over the spectrum. ICO estimates that the time required to award the spectrum in a new processing round and then have the licensee start service would be "at least five or six years." Comments of ICO, pp. 13-14. Also, TMI/TerreStar notes that the reduction in available spectrum and uncertainty involved in a new processing round could imperil financing for both TMI/TerreStar and ICO. Comments of TMI, pp. 21-22. Similarly, Boeing states that "MSS providers need the Commission's continued confidence and backing" to get the necessary financing. Comments of Boeing, p. 2.

## Appendix 1

Curriculum Vitae of Bruce M. Owen

# CURRICULUM VITÆ

## Bruce M. Owen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| OFFICE ADDRESS | Stanford Institute for Economic Policy Research (SIEPR)<br>Landau Economics Building #141, 579 Serra Mall @ Galvez St.<br>Stanford University, Stanford, CA 94305-6015<br>Direct line and voice mail: 650 724-2404<br>FAX 202 296-7138 • e-mail: bmowen@stanford.edu |
| BACKGROUND | Born 1943, Worcester, Massachusetts • Attended public schools in Millbury, Massachusetts • Married 1965 to the former Josetta Knopf • Two children: Peter 1969 and Bradford 1974. |
| EDUCATION | B.A. Williams College 1965.<br>Ph.D. Stanford University 1970. |
| PRESENT POSITION | Morris M. Doyle Centennial Professor in Public Policy and Director, Public Policy Program, School of Humanities and Sciences, Stanford University, 2005-; Gordon Cain Senior Fellow, Stanford Institute for Economic Policy Research 2003-; special consultant, Economists Incorporated 2003-. |
| PREVIOUS EXPERIENCE | Economists Incorporated: Co-founder and CEO, 1981-2002 • Stanford University: Visiting professor of economics, Stanford in Washington, 1989-2002 Assistant professor of economics 1973-1978 • Antitrust Division, United States Department of Justice: Chief economist, 1979-1981 • Duke University: Associate professor of business and law, 1978-1980, adjunct professor of public policy, 1981-88 • White House Office of Telecommunications Policy: Chief economist, 1971-1972. |
| MEMBERSHIPS AFFILIATIONS | American Economic Association • Econometric Society • American Law and Economics Association • American Bar Association (Associate). |
| FELLOWSHIPS | Merit Scholar 1961-65; Woodrow Wilson Fellow 1966; National Defense Education Act Title IV Fellow 1966-69 Brookings Institution Economic Policy Fellow 1970-1971; Hoover Institution National Fellow 1974-1975; Aspen Institute for Humanistic Studies Fellow and chairman, Task Force on the Future of the Postal Service 1978-79 |

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| RECENT PROFESSIONAL ACTIVITIES | Taught undergraduate seminar on economic analysis of law, Stanford in Washington, 1989-2002 • Editorial Board, *Journal of Media Economics*, 1990-2004 • Invited lectures, Fordham Univ. Business School, Yale Univ. School of Management, 2000 • Referee, *Journal of Industrial Economics*, 2001-02 • Referee, *Review of Economics and Statistics*, 2001 • Invited paper, AEI-Brookings Jt. Center Conference on Broadband, October 2001 • Panelist, Conference on Digital TV, American Enterprise Institute, October 2001 • Panelist, FCC Roundtable on Media Ownership Policies, October 2001 • Invited panelist, antitrust in the sports industry, Antitrust Division, USDOJ 2002 • Presenter, World Bank Conference on Legal and Judicial Reform in Ecuador, Quito, 2003 • Invited presenter, FCC en banc hearing on media ownership, Richmond, 2003 • Invited paper, Conference on Net Neutrality, Progress and Freedom Foundation, Washington, 2003 • Referee, *Science* Magazine 2004. |
| CURRENT PROJECTS | *Mass Media Power*. Book manuscript.<br>Intellectual property rights: paper in process.<br>ABA handbook on antitrust: chapter on international enforcement issues. |

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## BOOKS

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## Consulting (partial)

AARP
ABC
ACF Industries
Aerojet Technologies
Airline Reporting Corp
Alcoa
Alliant Technologies
Alpo
American Airlines
Amer. Horse Show Assoc.
America Online
Arbitron
ARCO
Asbury Park Press
ASCAP
AT&T
AT&T Cable
AT&T Wireless
Atlas Copco
Baker International
BASF
Bayer
Bellcore
Bertelsmann
Broadcast Music Inc.
Boots Pharmaceuticals
Bowater
Brinks
Bristol Myers Squibb
British Oxygen Corp
British Steel
Brown & Williamson
Brunswick Corp
Buckeye Pipeline
Burlington Industries
Cablevision
Cadbury Schweppes
Cargill
Case
CBS
Chubb
Clear Communications
CNN
Coca Cola
Coca Cola Enterprises
Colgate Palmolive
Comcast
Consolidated Edison
Continental Airlines
Control Data Corp
Coopers & Lybrand
Coors
Cox Broadcasting
Deloitte Touche
DeVry
Disney
Dresser Industries
Eaton
Educational Testing Service
Eli Lilly
Emhart
Englehard
Ernst & Young
ESPN
Ex-Cello Corp
Exxon Chemical
Federal Express
Fox
Freedom Communications
Gannett
GATX
General Motors
General Signal
Gemstar
Georgia Pacific
Goodyear
Gray Line
Group W
Grumman
Guardian Industries
Hachette
Hallmark
Hanna
Hillenbran
Hill-Rom
Hiram Walker
Honeywell
Hughes Communications
IBM
Ingersoll Rand
Int'l Hockey League
Iowa Beef
Itel
Johns Mansville
J. Ray McDermott
J.R. Simplot
Jenny Craig
Kansas Power & Light
Kendall
Kikkoman
Knight Ridder
Lawyers Title
Liberty Media
LTV
Lubrizol Corp.
MCA
MCI
Merck
Minebea
MPAA
MTV
National Assoc. Broadcasters
National Basketball Assoc.
National Football League
National Hockey League
National Cable Telecom. Assoc
NBC
NEPA
News Corp.
New Skies
New York Power Authority
New York Times
Nintendo
Newspaper Assoc. of Amer.
North American Phillips
Northwest Airlines
Optel
Optus
Orion
Owens Corning
Pacific Telesis
Pan Am
Panamsat
Paramount
PBS Peat Marwick
PECO
Pfizer
Philip Morris
Proctor & Gamble
Purolator
Quaker Oats
QVC
Reliance Electric
RIAA
SBC
Sea Land
Sealy
Simmons
SKF
Spanish Int'l Network
Sprint
Square D
Tarmac
Telstra
Texas Utilities
Times Mirror
Todd Shipyards
TRW
Turner Broadcasting
TV Guide
TWA
Union Carbide
United Airlines
Universal Leaf
US Brands
US Brewers' Assoc.
Viacom
Washington Post
Western Fuels
Westinghouse
Worldcom
Yale Materials Handling Corp.

**Law Firms:**

Akin Gump Strauss Hauer & Feld
Arendt Fox Kintner Plotkin & Kahn
Arnold & Porter
Baker & Hostetler
Bogle & Gates
Cahill Gordon & Reindel
Carrington Coleman Sloman & Blumenthal
Cleary Gottlieb Steen & Hamilton
Collier Shannon & Rill
Covington & Burling
Cravath, Swain & Moore
Crowell & Moring
Davis Graham & Stubbs
Davis Polk & Wardwell
Dickstein Shapiro Morin & Oshinsky
Dow, Lohnes & Albertson
Dykema Gossett
Elworthy
Fenwick & West
Foley & Lardner
Fried Frank et al
Hale & Dorr Hogan & Hartson
Hopkins & Sutter
Hughes Hubbard & Reed
Jenner & Block
Jones Day Reavis & Pogue
Kelley Drye & Warren
Kikland & Ellis
King & Spalding
Latham & Watkins
Mayer Brown & Platt
Milbank Tweed Hadley & McCloy
Mintz Levin Cohn, Ferris, Glovsky and Popeo
Morrison & Foerster
Mudge Rose Guthrie Alexander & Ferdon
Nixon Hargraves Devans & Doyle
O'Melveny & Myers
Paul Weiss Rifkind Wharton and Garrison
Pillsbury Madison & Sutro
Piper & Marbury
Proskauer Rose
Reid & Priest
Shearman & Sterling
Sidley & Austin
Simpson Thacher & Bartlett
Skadden Arps Slate Meagher & Flom
Steptoe & Johnson
Squire Sanders & Dempsey
Sutherland Asbill & Brennan
Thompson Hine & Flory
Vinson & Elkins
Wachtell Lipton Rosen & Katz
Weil Gotshal & Manges
Wiley Rein & Fielding
Williams & Connelly
Willkie Farr & Gallagher
Wilmer Cutler & Pickering
Winthrop Stimson Putnam & Roberts

**Government entities**

Antitrust Division, USDOJ
Calif. Attorney General
Calif. Pub. Util. Commission
Calif. Insurance Comm.
City of San Diego
Federal Communications Commission
Federal Trade Commission
Government of Argentina
Government of Jamaica
Government of Mexico
Government of Peru
Sacramento Cable Commission
USAID
World Bank